

THE NATION PAYS HIGH FOR CARELESSNESS WITH FIRE

First Authentic Survey of Fire Causes Ever Made Shows Definitely That a Large Part of the Loss in the United States Is Wholly Preventable and Most of It Could Be Eliminated by Observing Simple Precautions—Cost of the Ubiquitous Match, Cigarette and Rubbish Heap.

By WILBUR E. MALLALIEU
General Manager National Board of Fire Underwriters

ECONOMISTS are wont to call attention to the constant financial loss due to American carelessness. Carelessness appears so tragically in the news columns through its toll of dead and injured that this fact has somewhat overshadowed its purely economic values, but it is coming to be realized that these values are of proportions almost inconceivable. Rarely, however, has this been illustrated so specifically as in the remarkable statistics on American fire causes now for the first time made public through the actuarial bureau of the National Board of Fire Underwriters. Americans have long regarded fire as a species of necessary evil, and have prided themselves upon possessing the finest fire-fighting equipment and the most efficient firemen of any country. This national complacency is dispelled with an abrupt shock when it is learned that, in spite of our superior fire departments, the per capita fire loss of the United States is many times as large as that of most foreign countries.

Results of an Extensive Survey

A natural question immediately arises as to the reasons for this disquieting fact. The reasons, of course, are manifold, but there has been a growing suspicion for years on the part of those who have studied the subject that most of the reasons are far from being excuses. Exact knowledge, however, has been lacking heretofore, and it is because of this lack that the National Board of Fire Underwriters, after much discussion with the National Convention of Insurance Commissioners, and the Fire Marshals' Association of North America, undertook the gigantic work of analyzing nearly all of the 500,000 or more fires which annually occur in the United States in order to tabulate and interpret the information deducible therefrom. This effort has entailed such extraordinary labor that the figures for 1915 are only now available. The following table shows the classification by causes. In order to facilitate a study of the table these causes have been subdivided into those which are adjudged to be Strictly Preventable, those which are Partly Preventable, and those which are Unknown, but which may safely be regarded as largely preventable. Indeed, the word "Preventable" stands over any consideration as being the first and most important lesson that the figures teach.

STRICTLY PREVENTABLE CAUSES		
	Amount.	Per cent.
Defective chimneys and flues.....	\$9,061,298	or 5.9
Fireworks, firecrackers, etc.....	260,520	or 0.2
Gas, natural and artificial.....	937,714	or 0.6
Hot ashes and coals.....	632,486	or 0.4
Ignition of hot grease, oil, tar, wax, asphalt, etc.....	440,963	or 0.3
Hot or molten metal.....	116,906	or 0.1
Matches.....	4,329,596	or 2.8
Open fires.....	746,871	or 0.5
Open lights.....	1,182,059	or 0.7
Petroleum and its products.....	1,647,513	or 1.1
Rubbish and litter.....	619,259	or 0.4
Smoking (cigars, cigarettes, pipes, etc.).....	4,505,963	or 3.0
Steam and hot water pipes.....	297,011	or 0.2
Stoves, furnaces, boilers and their pipes.....	7,942,080	or 5.2
Total	\$32,720,239	or 21.4
PARTLY PREVENTABLE CAUSES		
	Amount.	Per cent.
Electricity.....	\$11,142,559	or 7.3
Explosions.....	2,132,256	or 1.4
Exposure.....	18,683,925	or 12.2
Incineration.....	6,196,229	or 4.0
Lightning.....	4,698,125	or 3.1
Miscellaneous, cause known, but not classified.....	3,127,328	or 2.0
Sparks—from fires.....	4,846,123	or 3.2
Sparks—from machinery.....	1,857,972	or 1.2
Spontaneous combustion.....	5,463,822	or 3.5
Total	\$58,148,339	or 37.9
UNKNOWN	\$2,363,298	or 40.7
Grand total	\$153,231,876	or 40.7

Fire Causes—Strictly Preventable

Analyzing more closely, it may be noted that defective chimneys and flues, the third of the known causes in point of size, show a strange variation from 1.5 per cent in the District of Columbia to 24.7 per cent in New Mexico. Thus, in the District of Columbia, this cause was most negligible, while in New Mexico it was responsible for nearly one-quarter of the total fire loss. In the State of New York this cause is chargeable with 4.1 per cent. Fires of this nature are more frequent in winter than in summer, and, therefore, should logically show a larger proportion in Northern states than in those of the South, but Vermont, with 6.6 per cent, and Alabama, with 0.8 per cent, are so nearly equal as to make this hypothesis

difficult. It is probably nearer to the truth to regard the percentage as due in some measure to good construction, thorough inspection and careful occupancy. In almost every state this loss is far too great, and calls for diligent measures of protection. The combination of defective chimneys and shingle roofs is one of the most dangerous known to our civilization.

Next in order of presentation, although nearly the least of all in point of size, are fireworks, firecrackers, etc. This cause is a good example of what can be accomplished through popular education, for it is but a few years since the Fourth of July in the North and Christmas in the South were regarded with dread by fire departments. The movement for a "Safe and Sane Fourth" has been taken up with zeal by hundreds of communities, which are substituting patriotic exercises and wholesome sports for the indiscriminate use of powder, which was formerly deemed indispensable. Whatever may be the hardship to the feelings of Young America involved in this change, it is certainly productive of saving in life and property, not to speak of sundry fingers and toes, and a number of states now show a loss so small that it is figured at zero in counting fire costs. It is interesting to note that the small State of New Hampshire tops the list with a loss of \$59,713, or 4.9 per cent, from this cause. The next state in point of percentage is Arizona, with only .5 per cent, and the other states range downward. In thirty-one of the forty-eight states the percentage does not rise above .1 per cent. This is a remarkable improvement over former years, and yet its total of \$260,520 fire loss for the United States is still too large by that exact figure, since every dollar of it may be classed as strictly preventable.

The Toll of Gas

Considering the universality with which gas is used, the total of \$937,714 is hardly a large one, although the best authorities consider that under proper conditions it might all be eliminated. The worst offender from this cause is West Virginia, with 3 per cent, and Utah, with but \$10 loss for the entire year, makes the most favorable showing. Most of the states show a loss of less than 1 per cent, the largest figures generally being found where natural gas is a commodity. There are fewer open gas flames to-day than was the case in former years, and popular education has progressed somewhat, but there is still room for improvement to the extent of nearly a million dollars.

Fires started from hot ashes and coals are principally due to the carelessness of the householder. They are generally the result of putting hot ashes containing live coals into wooden barrels or boxes. And even the Southern states show some damage from this bad habit. Wyoming, with its percentage loss of 1.9 per cent, has the highest percentage figure, although Minnesota, with \$52,345, shows the largest amount of property consumed. By a strange coincidence, Idaho, adjoining Wyoming upon the north, has the most favorable record, and shows but .1 per cent of damage.

Some Strange Geographical Variations From ignition of hot grease, oil, tar, wax, asphalt, etc., the table shows losses of \$440,963, but Ohio, with its large oil interests, suffered nearly one-quarter of this entire amount, the figure being \$103,876, or 2.1 per cent. It is another strange coincidence that Oklahoma, with its very large oil interests, suffered to the extent of but \$884, and is rated at 4.9 per cent, this figure being too small to recognize upon a percentage basis of one decimal place. New York's loss of \$74,170, or .4 per cent, is chargeable rather to the size of its population and the extent of its manufacturing interests than to natural features.

For the most part the states show little damage from hot or molten metal, and a few of them have none at all. The total, however, reaches the sizable figure of \$116,906. For some reason, Maine has the largest figure, with \$22,080, with Massachusetts and Indiana next, each having something over \$19,000 of loss. With the exception of Maine, all of the states are below 1.0 per cent.

The Most Prolific Source of Fires With matches we come upon a real fire cause of large proportions, and New York State alone suffered a loss of \$887,728 from their misuse. This is a case of unadulterated public

carelessness par excellence, as every one who has eyes must realize. In only eight of the states does the percentage fall below 1.0 per cent. It may be interpolated that these figures are somewhat misleading, because many other instances are doubtless covered up under the heading of Unknown Fire Causes. Certainly most fires, whatever may be their direct cause, are indirectly traceable to matches, and these little articles of universal convenience are used by the average citizen with great disregard for their immense powers of destructiveness.

Of all of the states, Rhode Island, with 8.8 per cent, makes the worst showing, after which come Massachusetts, with 5.4 per cent; Illinois, with 4.7 per cent, and New York, with 4.3 per cent. Florida is credited with but 0.4 per cent, and has, therefore, the best apparent record.

The largest figure under "Open Fires" is that of Pennsylvania, \$160,257, with New York, \$95,005, second, and Georgia, \$53,701, third. From the standpoint of percentage Mississippi, with 1.7 per cent, is slightly ahead of several other states, while Nevada and New Mexico have no fires whatever charged to this cause. The national total is nearly three-quarters of a million dollars.

Open lights are directly associated with carelessness in the home, and yet one state—Vermont—reports no fires from this cause, and in Wyoming the loss was but \$85. On the other hand, New York had losses of \$230,742 and Massachusetts of \$180,529. Massachusetts and Ohio have the largest percentage, the figure being 1.9 per cent in each case.

Dangers That Lurk in Kerosene

Under the heading Petroleum and Its Products, which means, of course, not only kerosene, but the ubiquitous and dangerous gasoline and other lesser products, such as lubricants, Delaware shows the largest percentage of loss, with 4.5 per cent, and South Dakota, with 2.7 per cent, comes next, although New York has the largest physical loss, its total being \$234,633. Of all the states Alabama, with 0.3 per cent, has the smallest loss.

The value of "clean up" days on the part of the citizens and the periodic inspection by uniformed firemen under the direction of the Chief of the Fire Department in our more progressive cities as an aid to fire prevention may be appreciated from the fact that total losses of \$618,259 are attributable to rubbish and litter. This gospel would seem to be most necessary in the District of Columbia, where the astonishing percentage of 10.6 per cent is recorded, as against no recorded fires from this cause in Arizona. Illinois' losses were the largest in property consumed, being \$80,899, after which come Massachusetts, \$53,507; Oregon, \$51,893, and New York, \$44,609, in the order named. It is encouraging to note that only five states exceed 1.0 per cent of fires from this cause.

The Case Against the Smoker

Most smokers would indignantly resent the charge that they are not "good citizens," but the burden of proof would seem to be on them in the light of figures which show a total fire loss of \$4,505,963, attributable to their carelessness. Only one state falls below 1.0 per cent under this heading, and that is Arkansas, with 0.7 per cent. On the other hand, the figure rises to 18.0 per cent in Nevada, or nearly one dollar in every five of the state's total loss. Nevada has the smallest population of any American state, and it is a coincidence that the smallest state in point of territory should be the second in proportion of fire loss from smoking. Rhode Island's figure being 11.0 per cent, Idaho comes next, with 10.5 per cent, while New York, as is perhaps natural in consideration of its population, has the largest loss in dollars. New York's figure is \$801,582, or one dollar in every twenty-five of its total fire loss.

It may be a surprise to some to find steam and hot water pipes figuring as a cause of fires, and yet insurance men have reason to so regard them. In New York State alone the year's loss from this cause was \$95,005. The percentages run from 0.5 per cent in the case of New York to 0.0 per cent in several of the states.

Of all known fire causes that embracing stoves, furnaces, boilers and their pipes ranks fourth, and it is next to the largest of the strictly preventable causes. Idaho seems to be the worst offender in the matter of defective heaters, with 15.4 per cent, and South Dakota, with 11.8 per cent, is second. New York again takes the lead with total losses of \$869,475, and Illinois is a close second, with \$799,566. No state comes down to a fractional percentage, the smallest figure being that of Alabama, 2.4 per cent.

All of the above are ranked as Strictly Preventable Causes, some being due to habits of direct carelessness on the part of the public and others to a lack of the preliminary inspection which would reveal the danger point. Taken in the aggregate, they form a serious indictment

of the characteristic national heedlessness.

The next nine causes cited in the table come under the heading of Partly Preventable, the degree of preventability varying somewhat with local conditions, but appreciably large in all cases.

With the single exception of "Exposure," which implies a multiplicity of primary causes, electricity is chargeable with greater damage than any other cause in the table, and of this damage it is undeniable that a large portion is due to carelessness in use or to lack of inspection. It is scarcely thirty years since electricity began to figure prominently as a fire cause. When electric lights first appeared it was supposed by underwriters that they would effect a reduction in the number of fires through their displacement of the known dangers of gas and kerosene. These optimists, however, were speedily disillusioned, since it became evident that electricity brought new and subtle dangers of its own. Fires from defective insulation for example often broke out in places difficult of access in walls and elsewhere. With electricity's extraordinary usefulness, its universal distribution and its numerous forms of application it practically has assumed first place as a cause of fire, and this in spite of the great progress in correcting many of the earlier defects in switches, wiring and apparatus.

Electric Irons a New Peril

No one who recalls the Iroquois Theatre horror can doubt the need for extraordinary care in handling this dangerous force, and yet an almost new item that is rapidly growing formidable bespeaks the greatest carelessness. This is the epidemic of fires from small electric home devices like smoothing irons and curling irons and the want of exercising the proper care in their use. Underwriters are genuinely alarmed at the frequency with which it appears that such irons have been left in circuit, with the current turned on, and forgotten by their users until they have become overheated and have set fire to their surroundings. This is already a serious peril to life and property, and one that is highly inexcusable.

Under electricity the largest total losses are those of California, which makes a showing of \$1,035,405, or 14.2 per cent. This, however, is exceeded in percentage by Arizona, where 30.4 per cent of all fire loss was so caused, and by Montana, with figures of 19.2 per cent. Delaware makes the astonishingly low showing of 1.1 per cent, a figure that is not approached by any other state. The loss of New York is \$933,413, or 4.7 per cent of the whole.

The extraordinary damage from recent explosions is, of course, not included in these figures, which are for the year 1915, but explosions in some form or other are a constant menace in every state. New York again has the largest total with \$312,871, but the percentage of Nevada, 7.8 per cent, is the highest, with Maine, 6.2 per cent, second, and New Mexico, 4.7 per cent, third. Georgia, with 0.2 per cent, seems to have been the safest in this regard.

Fires from Exposure

Exposure fires are divided into two classes—external and internal. External exposure is that of one building to another; internal exposure is due to a fire starting in the stock or premises of one tenant and communicating to the premises of another tenant in the same building. All such fires are assigned to this

cause, whether internal or external. These fires, of course, share the degree of preventability of the primary cause, and in addition to this are largely affected by such questions as fireproof roofing, fireproof construction, water supply, fire department efficiency, and various other elements that are strictly within human control. The fact that the city of Vienna, in Austria, is said never to have known a fire which spread beyond the building in which it originated is sufficient commentary upon the subject of preventability in exposure fires. There is hardly a small town in the United States which can match the record of this great city.

New York State, naturally, has the largest total again—\$2,861,090, or 14.3 per cent of the whole. Its percentage is exceeded by South Dakota, 28.6 per cent; New Hampshire, 22.6; and several others, while the best record is that of Wyoming, 6.4 per cent.

It was formerly supposed that more than 50 per cent of all fires were of incendiary origin, and it cannot be doubted that the percentage is much larger than the figures given here, since many of the "unknown" causes are doubtless due to crime. The known total of \$6,196,229, however, is by no means negligible, and The National Board of Fire Underwriters, in connection with local authorities, is now engaged in organizing a great campaign throughout the United States. This despicable form of crime not only has been a cause of great property loss, but has cost numberless lives. The District of Columbia shows the large percentage of 17.1 per cent, which is greater than that reported in any of the states, but California's 12.2 per cent ranks next in proportion, and its \$886,454 is far the largest total of loss, being nearly \$300,000 greater than the figures for New York. Nevada reports only 0.6 per cent as due to this cause, the best showing of any state.

Lightning Loss Can Be Prevented

A total of \$4,698,125 loss due to lightning proves that all fires are not of human origin, but that the degree of preventability ranges high is true, nevertheless. Comparative statistics between rodded and unrodded risks show that only a trifle over 7 per cent of this large total damage was suffered by buildings having lightning rods. It is even more startling to discover that the State of Oklahoma sustained 31.3 per cent of its total fire damage from this single cause, a fact which is doubtless explained by the frequency with which large oil storage tanks are struck by lightning. As against this the states of Arizona, Nevada, Washington and the District of Columbia are rated as 0.0 per cent, their losses having been less than one-twentieth of 1 per cent.

Sparks from fires are another of the large items, with a total of \$4,846,123. The lesson for fireproof construction is too obvious to require comment. Under this heading the worst showing is made by Mississippi, 10.7 per cent; with Arkansas, 9.9 per cent, second; Florida, 8.8 per cent, third, and Alabama, 8.7 per cent, fourth. The Southern States thus appear to have been the leading sufferers. In Arizona the percentage falls to .1 per cent, the best showing of any state.

The layman might hardly expect to find a total of \$1,857,972 attributed to sparks from machinery, but this has proved a serious item in some localities, notably in Texas, where it caused damage of \$262,477, or 4.5 per cent. North Dakota, with 5.4 per cent, records an even larger percentage, although smaller in ac-

tual money loss, while Arkansas, Delaware, Missouri, New Mexico and Utah are rated at 0.0 per cent.

Spontaneous Combustion Not a Myth

Some people have supposed that spontaneous combustion is a myth, but there is nothing mythical about a fire loss of \$5,463,822 in the United States in a single year. When it is estimated that this figure is 50 per cent preventable, it may be assumed that such an estimate is very conservative. The most frequent cause of spontaneous combustion is from allowing oily rags to be kept in wooden boxes or in contact with combustible material. Certain kinds of oil have a great tendency to produce flame upon the least opportunity. The public has been warned times without number of the danger of carelessness in this matter, but oily rags are so often found in every household, factory and business building that the proportion of careless individuals is able to cause severe losses. Massachusetts would seem to be the state of the most careless people from this standpoint, since it suffered nearly one-fifth of the total American loss, the exact figure being \$1,067,224, or 11.3 per cent. Another New England state, Vermont, is second, with 9.6 per cent, while little Delaware does not report a single dollar of damage from spontaneous combustion.

Fires from Unknown Causes

The third division is that of "Unknown Causes," and, for obvious reasons, this cannot be subdivided. Fires so frequently burn up the evidence of their origin that this division probably can never fail to be a large one, but it would seem that loose reporting must account for the fact that 62.2 per cent, or nearly two-thirds of the entire fire loss in New Jersey, has been designated as "Unknown" in origin. In contrast with this, South Dakota accounts for the origin of all but 17.2 per cent of its fires, and the average for the United States is 40.7 per cent. The total is \$2,363,298. It cannot be doubted that a substantial proportion of this huge total might have been prevented.

After such an analytical study it is hardly necessary to call attention to the vast economic waste of fire and the shocking way in which such figures discredit our national housekeeping. With all due allowance for sub-standard fire departments and water supply systems here and there, the lesson is constantly borne in upon us that Americans are a nation of careless people who take unnecessary chances and disregard the simplest precautions. The presence of one careless individual in a community imperils his careful neighbors, if such there be. It probably is only by a systematic and patient educational campaign, extending over years, or generations, if need be, that America can be weaned from this national failing.

EXPORTS FROM AMSTERDAM TO THE UNITED STATES

The total value of articles invoiced at the American Consulate at Amsterdam for the United States for the year 1916 was \$37,970,830, being larger than that of any previous year. The following table shows the comparative values during the last five years, together with the values of diamonds and tobacco, the chief articles exported to the United States:

Year.	Total value of exports.	Diamonds.	Tobacco.
1912.	\$26,168,048	\$10,645,289	\$7,887,517
1913.	27,051,862	11,070,862	8,589,717
1914.	24,684,322	5,605,378	9,703,797
1915.	19,475,916	9,474,416	4,593,383
1916.	37,970,830	21,144,435	8,634,974

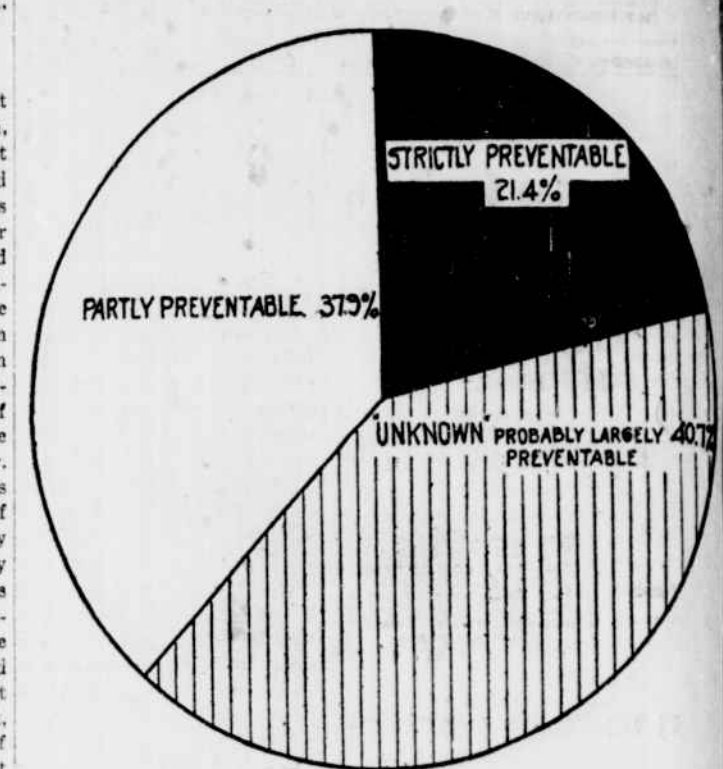
The total value of diamonds for 1916 is practically the same as the combined value of the diamond exports to the United States from Amsterdam and Antwerp before the war, which has suppressed the trade at Antwerp. However, as prices are much higher now than before the war, this combined value presumably represents fewer diamonds than were formerly sent from both Amsterdam and Antwerp.

The value of other important exports to the United States in 1916 were: Hides and skins, \$2,087,560; cocoa and its products, \$1,043,534; cinchona bark, \$962,941; quinine, \$536,033; seeds, \$319,816; rugs, \$277,331; spices, \$178,811; paints, \$172,928; rubber, \$164,689; and bulbs, \$134,995.—Report from Consul Frank W. Mahin.

Brazil's Sugar Industry

Exact figures of the output of sugar in Brazil are not available, but the chief of the bureau of information of the Brazilian Department of Agriculture has, in an official communication to the United States Consulate General at Rio de Janeiro, estimated the total annual production at 300,000 tons, equivalent to 5,000,000 bags of 60 kilos (132 pounds) each, of which 666,000 bags are credited to Rio de Janeiro, 1,800,000 to Pernambuco, 300,000 to Bahia and 2,284,000 bags to the other states of the republic.

OUR ANNUAL BONFIRE



NEARLY one-quarter of the fire losses in the United States every year could be prevented if proper precautions were taken. This percentage would undoubtedly be increased materially if the causes of all the fires now classified as "unknown" were reported. The loss under "partly preventable" fires is placed at 37.9 per cent.

JAPAN IS EAGER TO FINANCE CHINA

Baron Shibusawa Says Bankers of Nippon Welcome Opportunity to Join Hands with American Capitalists

By ADACHI KINOSUKE

BARON SHIBUSAWA, in an interview published in the "Hochi" (Tokio), has many pertinent and interesting things to say on the investment of capital in China. He is quoted as follows: "China is Japan's investment field par excellence. At present China is in desperate financial straits. The people are hard up and so is the government. Both her domestic and foreign affairs are in a tangled and altogether precarious condition. But there is no doubt whatever that she is to be a great world market in the future; she will be the stage for a great international competition very soon. This is the opportune moment for Japan which enjoys special relations with China and a position of vantage to be up and doing. If Japan were to lose this opportunity she would see a thousand years of regrets and repentances. China's ills are many and grievous, but the worst of her troubles is financial. And our country should go to her rescue ahead of all the rest of the world.

"A radical reformation of the financial system of China should be the first on the programme. Her silver standard should be changed to the gold standard. Her central bank should be modelled upon the central bank of Japan; and her monetary system should be made uniform. All these reforms call for a great deal of money. Japan should lead in the work of inducing the countries of the world in supplying China with the needed funds.

"Now, the United States to-day is so rich she is troubled in devising the ways and means of placing her ever-increasing idle funds. To-day America sincerely desires to invest her money in China. I have even heard that there is a plan afoot of stationing a number of men to look into the investment conditions in China for the benefit of the American financial corporations. The United States should, therefore, gladly respond to our solicitations for placing her funds in China.

"Our financial leaders should take the initiative in this matter and persuade China to welcome the importation of foreign capital. Japan should adopt the positive policy of leading the international investors in China. "In my judgment, it is vitally important that Japan should join the United States in her investment activity in China—for America has the same desire to enter the Chinese field as Japan. We should work this problem out hand-in-hand with the American capitalists. The friendly cooperation between the United States and Japan in China is not only the safest method for Japan and her interest, but it is also the most helpful procedure for the economic development of China herself."

A S ONE of the signs of war prosperity in Japan the Sumitomo family celebrated their profitable year by distributing five million yen (about \$2,500,000 in gold) among its employees at the beginning of this month. The Sumitomo family is one of the wealthiest families in Osaka, and is presided over by Baron Kichisomoto Sumitomo. The family is the owner of the Sumitomo Bank and also many valuable copper mines.

In Japan, Too

Consul M. D. Kirjassoff, of Yokohama, reports that railway traffic congestion was far greater than usual in the closing week of 1916, probably on account of the increased commercial and industrial activity in Japan as a result of the war. "The Japan Chronicle" says it is reported that 400,000 tons of goods are now accumulated at railway stations.

According to investigations made by the Railway Bureau, the freight traffic on the government lines, or on the principle railway lines in the country, from January to the end of November, 1916, amounted to 25,000,000 tons, yielding a total income of \$4,800,000 yen (\$22,332,800). Compared with the corresponding period of 1915, these figures show an increase of 8,000,000 tons and of \$5,000,000 yen (\$23,332,800) respectively.

The rate of increase in freight traffic up to the end of November figures at about 13 per cent. During this end forty percent continued to increase and amounted to 700,000 tons from the 1st to the 6th, showing an increase of 87,000 tons over 1915.

AMERICAN EXPERTS FOR AUSTRALIAN INDUSTRIES

There is a marked tendency toward increasing Australia's production of manufactured goods, especially in such lines as metals, textiles, glassware, rubber tires, chemicals and drugs. To this end forty expert glassworkers arrived in Sydney a few weeks ago, according to a report from the United States Consulate General, from the large glass factories in this city. Melbourne and Adelaide; expert tire builders have been engaged to remedy any defects that may exist in local manufactures, and skilled metal workers, to take important positions in the benefit of their knowledge to Australian producers of lead, copper and steel. Australian manufacturers are sending employees to the United States to become familiar with American shop methods and to purchase machinery for the industries they represent.